Advanced Medical Microelectronics for Use in Remote Austere Environments

NOTE: The Solicitations and topics listed on this site are copies from the various SBIR agency solicitations and are not necessarily the latest and most up-to-date. For this reason, you should use the agency link listed below which will take you directly to the appropriate agency server where you can read the official version of this solicitation and download the appropriate forms and rules.

The official link for this solicitation is: http://www.acq.osd.mil/osbp/sbir/solicitations/index.shtml

Agency:
Department of Defense

Release Date:
November 16, 2012
Branch:
Special Operations Command

Open Date:
November 16, 2012
Program / Phase / Year:
SBIR / na / 2013

Application Due Date:
January 16, 2013

Solicitation:
2013.1

Close Date:
January 16, 2013
Topic Number:
SOCOM13-003

Description:
OBJECTIVE: To combine the capabilities of several medical electronics devices into a single device while maintaining portability and ease of use. DESCRIPTION: Current Special Operations Forces (SOF) advanced medical diagnostic equipment is currently accomplished using multiple devices. The focus of the topic is to develop a small ruggedized system capable of consolidating those capabilities into a single device. PHASE I: The objective of this feasibility study is to determine what is in the art of the possible for the integration of current medical diagnostic capabilities into a single miniaturized device for providing medical care to SOF operators in remote and austere battlefield locations. The device must provide a balance between integrating multiple medical monitoring/diagnostic devices into a single platform that reduces the overall footprint of current technologies on the market today. This could be accomplished through the reduction in overall size, weight, and number of components without sacrificing overall capability. Study considerations include, but should not be limited to, the following capabilities and characteristics: a. Diagnostic Capabilities: (1) Ultrasound (2) Capnography (3) Blood Pressure (non-invasive) (4) Pulse Oximetry (5) Various Lead Electrocardiography Monitoring (6) Defibrillation b. Device Characteristics: (1) Portable (small and light enough for one SOF operator/medic to comfortably carry) i. Dimensions - 10.5"W x 9"H x 8"D maximum (Desired: 10.5"W x 8"H x 4"D or smaller) ii. Weight - 12 lbs. maximum (Desired: 6 lbs. or less) (2) Remote Monitoring of three or more patients i. Simultaneous monitoring of vital signs when combat medic tends to other wounded ii. Within 25 meters or line of sight of the combat medic (3) Operating Time - 7 or more hours of battery life (or alternate power sources) (4) Display - screen size sufficient to discern

noticeable indicators of vital signs (4) Interoperability with SOF field computing devices (5) Feasibility of a single device; i.e., If impractical, provide a trade off analysis of logical combinations of capabilities in one, or more, device(s). The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all known options that meet or exceed the minimum performance parameters specified in the Phase I topic write-up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough and comprehensive feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be invited to Phase II. PHASE II: During Phase II a standalone micronized electronic monitoring prototype system will be optimized based on the results of the Phase I feasibility assessment. Provide a prototype to demonstrate that the performance parameters and other characteristics listed in Phase I above can be integrated into a fully functional single device or multiple devices if necessary. The Phase II effort will also include ruggedizing the prototype system while maintaining a lightweight and small form factor. PHASE III DUAL-USE APPLICATIONS: Commercial applications in the area of micronized advanced monitoring capabilities are anticipated. Other industrial and protection services in the Homeland Security arena (i.e. first responders) are expected to benefit from these advances. The development of such capabilities could impact the overall medical field through implementation in triage and emergency room settings. This phase will align with consumer product markets and industrial protective services for commercial variants of the advanced monitoring system. At the completion of this phase, the system shall be capable of being tested in a simulated operational environment. REFERENCES: None